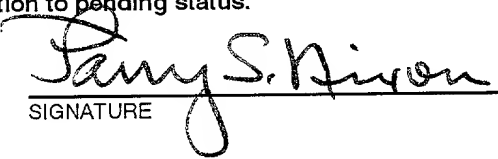


412 Dec'd PCT/PTO 0 5 JUN 2000

FORM PTO-1390 (REV 11-98)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 36-1320
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5) 09/555725 Unknown
INTERNATIONAL APPLICATION NO. PCT/GB98/03555	INTERNATIONAL FILING DATE 27 November 1998	PRIORITY DATE CLAIMED 9 December 1997
TITLE OF INVENTION CONFERENCE FACILITY		
APPLICANT(S) FOR DO/EO/US MC GRATH		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<p>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</p> <p>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</p> <p>5. <input type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <p>6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</p> <p>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (U.S.C. 371(c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p> <p>Items 11. To 16. Below concern document(s) or information included:</p> <p>11. <input type="checkbox"/> An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.</p> <p>12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</p> <p>14. <input type="checkbox"/> A substitute specification.</p> <p>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>16. <input checked="" type="checkbox"/> Other items or information. Amended Sheets 2, 3, 10 and 11</p>		

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.55) Unknown				INTERNATIONAL APPLICATION NO. PCT/GB98/03555		ATTORNEY'S DOCKET NUMBER 36-1320	
17. <input checked="" type="checkbox"/> The following fees are submitted:						CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5): -- Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....\$970.00 -- International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....\$840.00 -- International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but international search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO.....\$690.00 -- International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4).....\$670.00 -- International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4).....\$96.00 <div style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>						\$ 840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e))						\$ 0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE				
Total Claims	12	-20 =	0	X	\$18.00	\$ 0.00	
Independent Claims	2	-3 =	0	X	\$78.00	\$ 0.00	
MULTIPLE DEPENDENT CLAIMS(S) (if applicable)					\$260.00	\$ 0.00	
TOTAL OF ABOVE CALCULATIONS =						\$ 840.00	
Reduction by 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 C.F.R. 1.9, 1.27, 1.28).						\$ 0.00	
SUBTOTAL =						\$ 840.00	
Processing fee of \$130.00, for furnishing the English Translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 C.F.R. 1.492(f)).						\$ 0.00	
TOTAL NATIONAL FEE =						\$ 840.00	
Fee for recording the enclosed assignment (37 C.F.R. 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31). \$40.00 per property						\$ 40.00	
Fee for Petition to Revive Unintentionally Abandoned Application (\$1210.00 - Small Entity = \$605.00)						\$ 0.00	
TOTAL FEES ENCLOSED =						\$ 880.00	
						Amount to be: refunded \$	
						Charged \$	
a. <input checked="" type="checkbox"/> A check in the amount of \$880.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. 14-1140 in the amount of \$_____ to cover the above fees. A duplicate copy of this form is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-1140. A duplicate copy of this form is enclosed. d. <input checked="" type="checkbox"/> The entire content of the foreign application(s), referred to in this application is/are hereby incorporated by reference in this application. NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status.							
SEND ALL CORRESPONDENCE TO: NIXON & VANDERHYE P.C. 1100 North Glebe Road, 8 th Floor Arlington, Virginia 22201 Telephone: (703) 816-4000							
 SIGNATURE							
Larry S. Nixon NAME							
25,640 REGISTRATION NUMBER						June 5, 2000 Date	

09/555725

422 Rec'd PCT/PTO 05 JUN 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

MC GRATH

Atty. Ref.: 36-1320

Serial No. Unknown

Group:

National Phase of PCT/GB98/03555

Filed: June 5, 2000

Examiner:

For: CONFERENCE FACILITY

* * * * *

June 5, 2000

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to calculation of the filing fee and in order to place the above identified application in better condition for examination, please amend the claims as follows:

IN THE CLAIMS (AS APPEARING ON THE AMENDED SHEETS)

Claim 4, line 1, delete "2 or 3,".

Claim 5, line 1, delete "one of claims 1 to 4" and insert -- claim 1 --.

Claim 9, line 1, delete "any of claims 6 to 8" and insert -- claim 6 --.

Claim 10, line 1, delete "any of claims 6 to 9" and insert -- claim 6 --.

Claim 11, line 1, delete "any of claims 6 to 10" and insert -- claim 6 --.

Claim 12, line 1, delete "any of claims 6 to 11" and insert -- claim 6 --.

MC GRATH
Serial No. **Unknown**

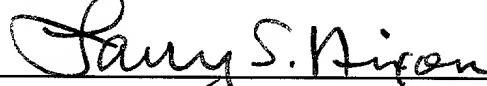
REMARKS

The above amendments are made to place the claims in a more traditional
format.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:



Larry S. Nixon

Reg. No. **25,640**

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Facsimile: (703) 816-4100

3/PART

09/555725
422 Rec'd PCT/PTO 05 JUN 2000CONFERENCE FACILITY

This invention relates to teleconferencing, and in particular a facility for the generation of images relating to a "virtual meeting space", within the context of which individuals at a plurality of locations remote from each other may interact in a manner which emulates a conventional meeting.

A number of systems are being developed which define a virtual Cartesian space in which the individual members of a teleconference are positioned, and each individual's view of the meeting space as shown on their display is determined by the individual user's position within the Cartesian space. Examples are to be found in United States Patent 5,491,743 granted to Shio et al (assigned to IBM), and European Patent Application no 0 516 371, in the name of Fujitsu. Facilities may be provided in such systems to allow documents to be created, retrieved, etc. For example, one wall of the "meeting space" may be represented as a drawing board on which images can be represented. The user wishing to use the drawing board carries out a control function which causes the system to change the relative positions of the user and the whiteboard in the virtual space such that the user can generate images on it.

Individual users are represented in the virtual space display by computer-generated representations of the users, known as "avatars" (or "icons"). These may be derived from video images of the users, either live or retrieved from a store, but usually they are digitally generated representations. In general, each user is able to select the appearance of his or her avatar in the virtual space from a menu of characteristics. Alternatively, each individual user may be able to select, for his own viewpoint, how each of the other users' avatars will appear. Other characteristics of the meeting space, such as the colour and shape of the elements of the meeting space, may also be selectable by the user.

There are a number of disadvantages to the conventional virtual meeting spaces. In the system discussed in the Shio patent already mentioned, an overview of a conference room is represented. Each user sees the same view, including his or her own avatar in whatever position it has been placed. In this arrangement the user does not have the feeling of being in a room with the other participants, but is merely watching his or her avatar's activities, from a vantage point outside the room. It is possible to arrange for each user to see only the

avatars of the other users, and not his own, from a viewpoint such that the relative positions of each avatar to each other avatar and to the user's viewpoint is consistent between users. For example, with reference to Figure 2 of the drawings attached to this specification, if a user "3" is shown a representation of the meeting space in which the avatar of user "1" is facing him, with avatars of users "2" and "4" facing each other at 90° to the viewpoint of user "3", then the user "4" would see the avatar of user "2" facing him, and the avatars of users "1" and "3" facing each other at 90° to his viewpoint. This gives a more realistic representation of a real conference room, but the relative positions of the users make it difficult to view all the users and other elements of the conference facility at the same time on a conventional video monitor.

In the Fujitsu reference mentioned previously, the avatars of the other users are arranged around the user's virtual viewpoint, as if on a turntable, which can be rotated to bring a selected avatar into view. The user represented by that avatar will not necessarily be looking at the first user's avatar. Thus eye contact is not necessarily two-way, and participants will not interact as they would in a real space as two avatars which appear adjacent to one user will not necessarily appear so to another user.

Furthermore, events taking place in the meeting space, such as an individual operating the "whiteboard", or joining or leaving the meeting, require complex navigation around the virtual space in order to be reasonably realistic. In both systems, such navigation requires considerable thought on the part of the user, to ensure that unrealistic occurrences, such as one user walking through another, or through the furniture, do not take place. Such distractions can disrupt the conduct of the conference itself. Furthermore, if a drawing facility is provided, it can only occupy a portion of the view, making it difficult to use.

According to the invention, there is provided a method of representing users on a display device in a telecommunications conferencing facility by means of graphical representations corresponding to the respective users, wherein the users are depicted as carrying out symbolic actions, relating to the various events taking place during the virtual telecommunications conferencing process, each user being presented with a viewpoint representative of the position of that user in a virtual space and in which the other users and their activities are represented by means of graphical representations, and characterised in that in the viewpoint presented to each user the representations of each of the other users are in positions, and have movements,

relative to each other and the viewpoint, selected according to the viewpoint of the user.

According to a second aspect, there is provided a telecommunications conferencing system comprising display control means for representing users on display devices by means of graphical representations corresponding to the respective users, the display control means being arranged to depict symbolic actions carried out by users, relating to the various events taking place during the virtual telecommunications conferencing process, each user being presented with a viewpoint representative of the position of that user in a virtual space and for presenting, to each user a representation of the other users and their activities; characterised in that the display control means is arranged to represent the presence and activities of each user to each other user by means of symbolic positions and movements, presented to each user such that in the viewpoint presented to each user the representations of each of the other users are in relative positions, and have relative movements, selected according to the viewpoint of the user.

This invention allows the realistic representation of a meeting by providing a "meeting space" which is consistent from the viewpoint of each user, without necessarily being consistent between users.

The more inconvenient aspects of a real meeting space can be eliminated, rather than emulated. For example, the accessing of a facility by one user for viewing by other users can be represented in a different manner for the viewing users and the accessing user, and users not currently actively engaged in the telecommunications conference can be represented in a different manner from those currently viewing the conference.

Activities such as providing copies of documents may be represented symbolically, and social cues may also be represented, in response to specific commands from the individual users.

Each user's representation of the meeting space may be arranged such that all other elements of the meeting space, including the other users, appear within a narrow and preferably fixed field of view, corresponding to his own display device's dimensions. For example, a user with a wide-screen panoramic display device may depict the other users spaced further apart than would a user with a much smaller screen, for example on a lap-top computer.

This improves the ease of use of the system by each user in the meeting space, as changes of viewpoint are not necessary. It allows all users to see each

ATTACHED FILE

CLAIMS

1. A method of representing users (1, 2, 3, 4) on a display device (21,22,23,24) in a telecommunications conferencing facility by means of graphical representations corresponding to the respective users, wherein the users (1,2,3,4)
5 are depicted as carrying out symbolic actions, relating to the various events taking place during the virtual telecommunications conferencing process, each user (1) being presented with a viewpoint representative of the position of that user (1) in a virtual space and in which the other users (2,3,4) and their activities are represented by means of graphical representations, and characterised in that in the
10 viewpoint presented to each user (1) the representations of each of the other users (2,3,4) are in positions, and have movements, relative to each other and the viewpoint, selected according to the viewpoint of the user (1).
2. A method according to claim 1, wherein for each user (1), the
15 representations of each of the other users (2,3,4) are arranged such that they are all contained within the field of view of the user's display device (21).
3. A method according to claim 2, in which the symbolic actions are selected such that they take place within a fixed field of view.
20
4. A method according to claim 1, 2 or 3, wherein the accessing of a facility by one user (1) for viewing by other users (2,3,4) is represented in a different manner for the viewing users (2,3,4) and the accessing user (1).
- 25 5. A method according to one of claims 1 to 4, wherein users (3) not currently actively engaged in the telecommunications conference are represented in a different manner from those currently viewing the conference (2,4).
6. Telecommunications conferencing system comprising display control means
30 (10, 11,12,13,14) for representing users on display devices (21, 22, 23, 24) by means of graphical representations corresponding to the respective users (1,2,3,4), the display control means being arranged to depict symbolic actions carried out by users, relating to the various events taking place during the virtual telecommunications conferencing process, each user (1) being presented with a

viewpoint representative of the position of that user (1) in a virtual space and for presenting, to each user a representation of the other users and their activities; characterised in that the display control means (10, 11, 12, 13, 14) is arranged to represent the presence and activities of each user (2,3,4) to each other user (1) by means of symbolic positions and movements, presented to each user (1) such that in the viewpoint presented to each user (1) the representations of each of the other users (2,3,4) are in relative positions, and have relative movements, selected according to the viewpoint of the user (1).

7. Conferencing system according to claim 6, wherein the display control means is arranged to represent, for each user (1), each of the other users (2 ,3, 4) such that they are all subtended within the field of view of the display device (21) of that user (1).

8. Conferencing system according to claim 7, in which the symbolic actions are selected such that they take place within a fixed field of view.

9. Conferencing system according to any of claims 6 to 8 comprising means for accessing a facility by one user (1) for viewing by other users (2 ,3, 4) wherein the accessed facility is represented in a different manner for the viewing users and the accessing user.

10. Conferencing system according to any of claims 6 to 9, wherein the display control means (10, 11, 13, 14) is arranged to represent users (3) not currently actively engaged in the telecommunications conference in a different manner from those (2 ,4) currently viewing the conference.

11. System according to any of claims 6 to 10, comprising client means (11, 12, 13, 14) associated with each user (1, 2, 3, 4) for generating at least part of the user's viewpoint.

12. System according to any of claims 6 to 11, comprising server means (10) accessible by each user (1, 2, 3, 4) for generating at least part of the users' viewpoints.

ABSTRACT

CONFERENCE FACILITY

A telecommunications videoconferencing facility represents other users on a user's
5 display device 21 by means of graphical representations (avatars) 2,3,4
corresponding to the respective users. The virtual environment can be arranged
differently for each user, e.g. the relative positions of the avatars and other
elements (e.g. whiteboard facility 32) of the environment can be different for ease
of viewing. The avatars carry out symbolic actions, relating to the various events
10 taking place during the virtual telecommunications conferencing process, under the
control of simple commands which cause their avatars to move in complex ways,
without the need for the user to perform a complex navigational task around the
virtual environment. For example, a user 2 wishing to use the whiteboard facility
32 can access it using a "mouse" or keyboard operation, which will cause the
15 avatar representing the user 2 to move to the whiteboard 32 in the virtual
environments of the other users 1, 3, 4. The act of copying a document 33 may
be represented by the movement of a representation 33a of such a copy across
the table 31.

20

Figure 8

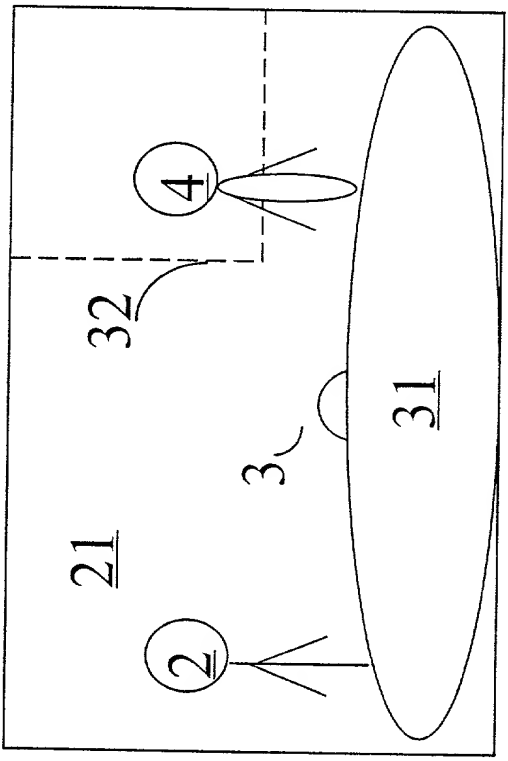


Figure 5

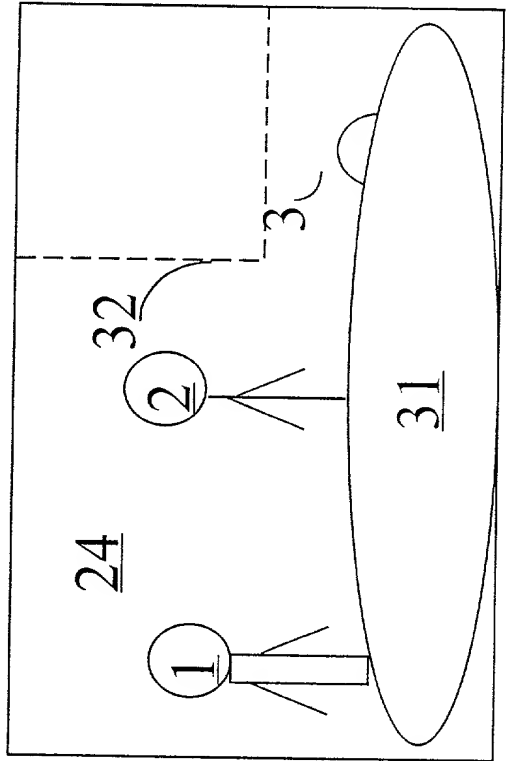


Figure 6

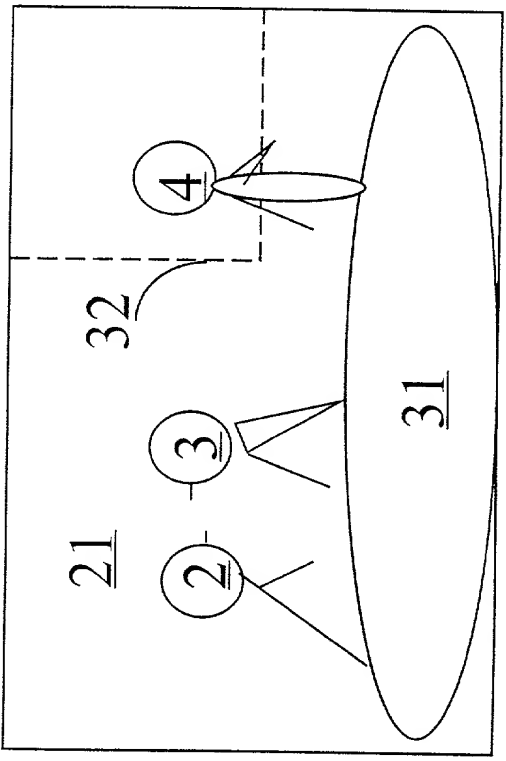


Figure 7

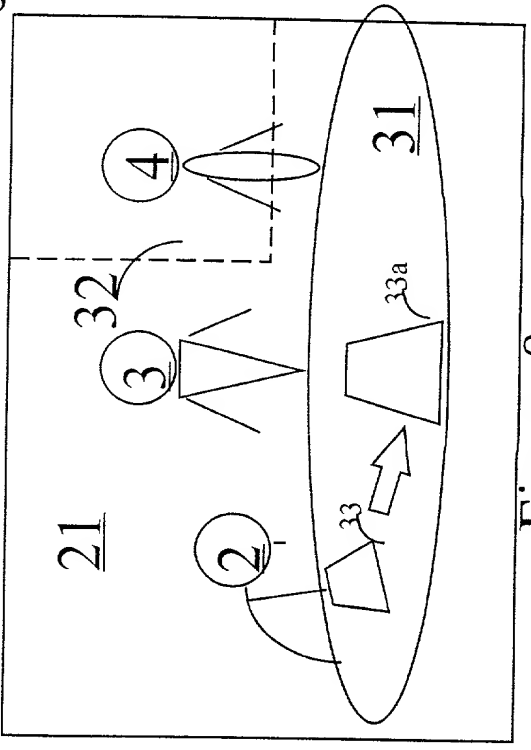


Figure 8

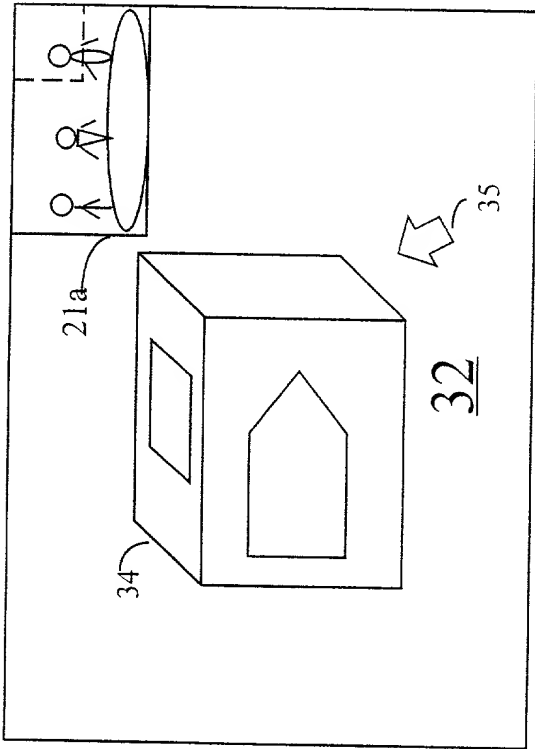


Figure 9

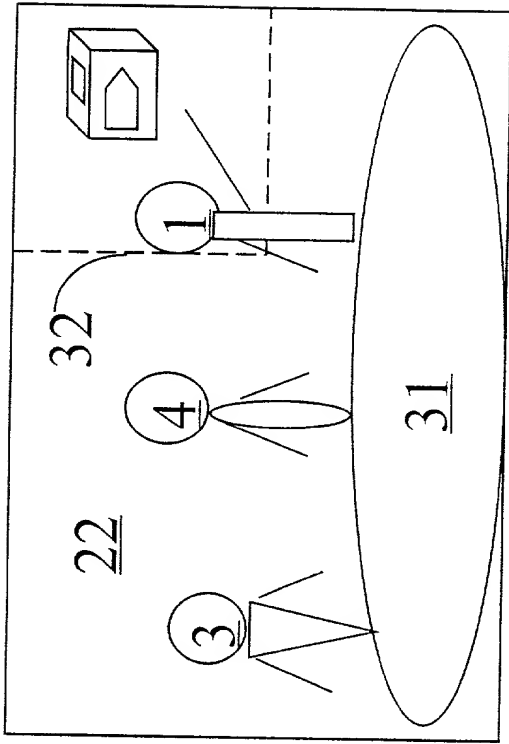


Figure 10

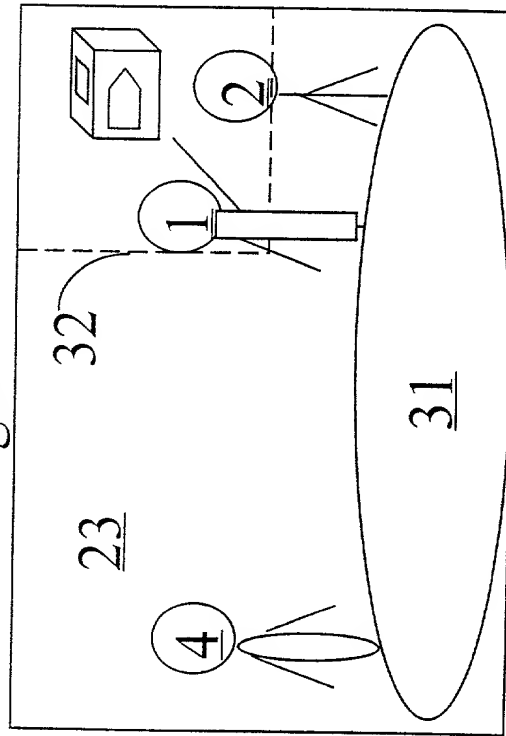


Figure 11

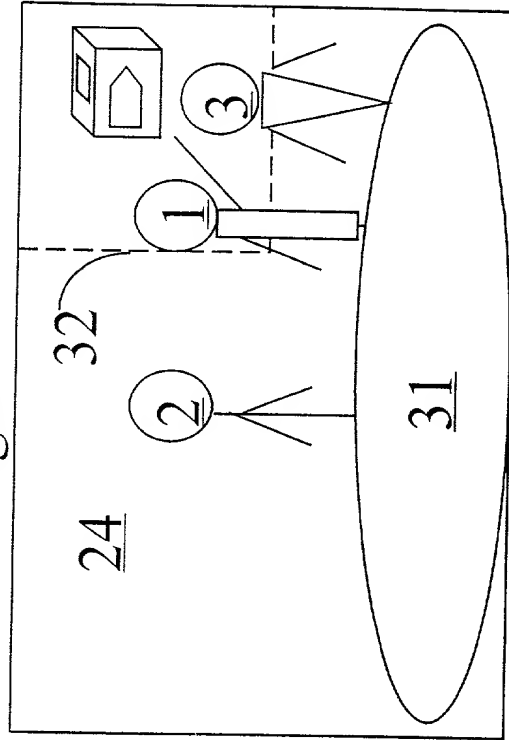
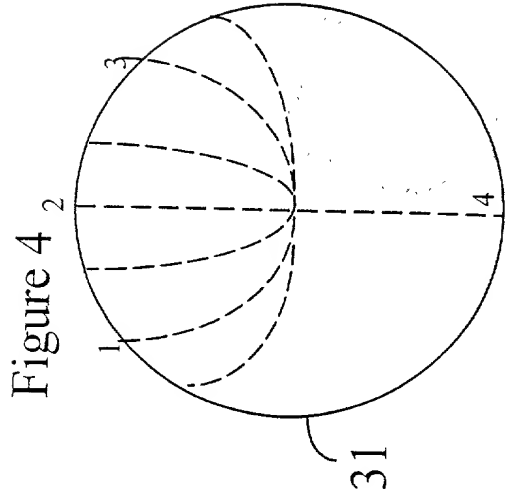
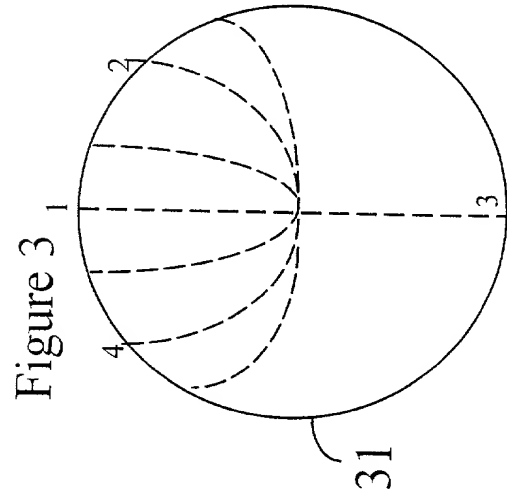
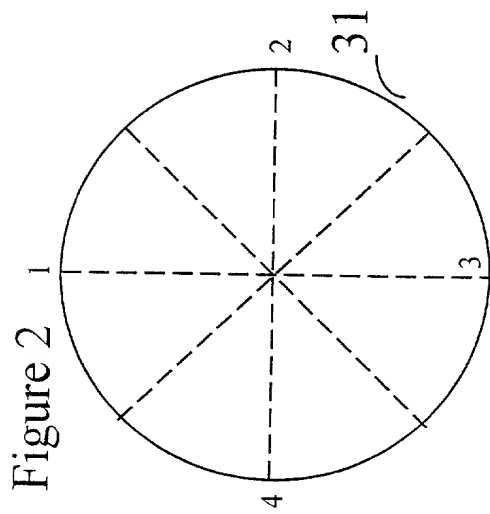
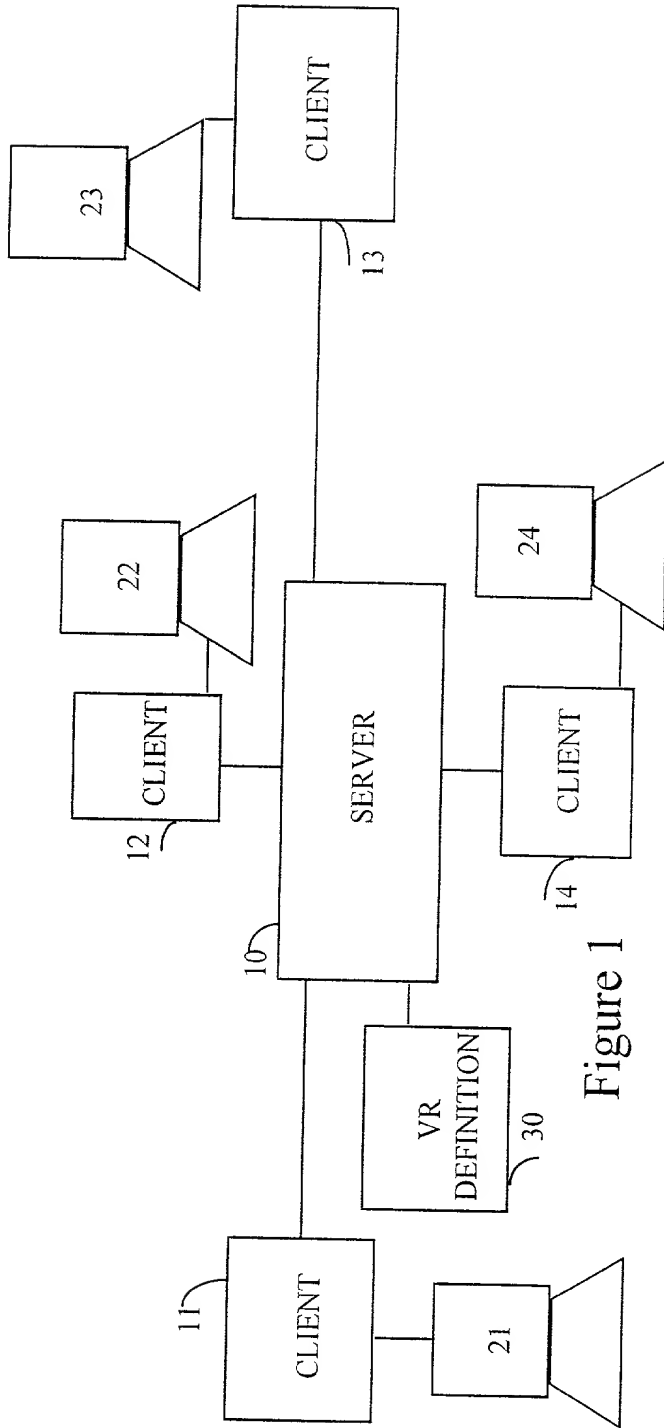


Figure 12



RULE 63 (37 C.F.R. 1.63)
DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: CONFERENCE FACILITY
the specification of which (check applicable box(es)):

☐ is attached hereto.

☐ was filed on _____ as U.S. Application Serial No.

☒ was filed as PCT international application No. PCT/ GB98/03555 on 27 November 1998

and (if applicable to U.S. or PCT application) was amended on _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 C.F.R. 1.56. I hereby claim foreign priority benefits under 35 U.S.C. 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed or, if no priority is claimed, before the filing date of this application:

Prior Foreign Application(s):

Application Number	Country	Day/Month/Year Filed
<u>97309926.0</u>	<u>EUROPE</u>	<u>09 December 1997</u>

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number	Day/Month/Year Filed

I hereby claim the benefit under 35 U.S.C. 120/365 of all prior United States and PCT international applications listed above or below and, insofar as the subject matter of each of the claims of this application is not disclosed in such prior applications in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. 1.56 which occurred between the filing date of the prior applications and the national or PCT international filing date of this application:

Prior U.S./PCT Application(s):

Application Serial No.	Day/Month/Year Filed	Status: patented, pending, abandoned
<u>PCT/GB98/03555</u>	<u>27 November 1998</u>	<u>Pending</u>

I hereby declare that all statements made herein of my own knowledge are true and that statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon. And I hereby appoint NIXON & VANDERHYE P.C., 1100 North Glebe Road, 8th Floor, Arlington, VA 22201-4714, telephone number (703) 816-4000 (to whom all communications are to be directed), and the following attorneys thereof (of the same address) individually and collectively my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith and with the resulting patent: Arthur R Crawford, 25327; Larry S. Nixon, 25640; Robert A. Vanderhye, 27076; James T. Hosmer, 30184; Robert W. Faris, 31352; Richard G. Besha, 22770; Mark E. Nusbaum, 32348; Michael J. Keenan, 32106; Bryan H. Davidson, 30251; Stanley C. Spooner, 27393; Leonard C. Mitchard, 29009; Duane M. Byers, 33363; Paul J. Henon, 33626; Jeffry H. Nelson, 30481; John R. Lastova, 33149; H. Warren Burnam Jr., 29366; Thomas E. Byrne, 32205; Mary J. Wilson, 32955; J. Scott Davidson, 33489; Alan M. Kagen, 36178; William J. Griffith, 31260; Robert A. Molan, 29834.

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